What is Claimed is:

1. A method for processing a substrate, comprising:

treating a surface of a dielectric layer comprising silicon and carbon by exposing the dielectric layer comprising silicon and carbon to a plasma of an inert gas; and

depositing a photoresist on the dielectric layer comprising silicon and carbon.

2. The method of claim 1, further comprising:

patterning and etching the photoresist layer to expose the dielectric layer comprising silicon and carbon; and then

etching the dielectric layer comprising silicon and carbon to form at least a portion of a damascene definition.

3. The method of claim 1, wherein the inert gas comprises argon, helium, neon, xenon, or krypton, or combinations thereof.

4. The method of claim 1, wherein the plasma is generated at a power level between about 200 and about 800 watts.

5. The method of claim 4, wherein plasma is generated at a chamber pressure between about 3 Torr and about 12 Torr.

6. The method of claim 4, wherein the substrate is maintained between about 300°C and about 450°C when exposing the dielectric layer comprising silicon and carbon to a plasma of a processing gas.

7. The method of claim 4, wherein the dielectric layer comprising silicon and carbon is exposed to the plasma for between about 10 and about 100 seconds.

8. The method of claim 3, wherein the processing gas is introduced into a processing chamber at a flow rate of about 3000 sccm or less.

9. The method of claim 1, wherein exposing the dielectric layer comprising silicon and carbon to a plasma of a processing gas comprises introducing an inert gas of helium, argon, neon, xenon, krypton, or combinations thereof, or

combinations thereof, into the processing chamber at a flow rate of about 3000 sccm or less, maintaining the processing chamber at a pressure of between about 7 Torr and about 10 Torr, maintaining the substrate temperature between about 300°C and about 450°C, generating the plasma by supplying a power level for a 200 mm substrate between about 200 watts and about 800 watts to the processing chamber, and maintaining the plasma between about 40 and about 60 seconds.

10. The method of claim 1, further comprising depositing the silicon and carbon containing layer on a dielectric layer comprising silicon, oxygen, and carbon.

11. The method of claim 2, further comprising depositing one or more conductive materials in the damascene definition to form a damascene structure.

12. A method for processing a substrate, comprising:

depositing a dielectric layer comprising silicon, oxygen, and carbon on the substrate by chemical vapor deposition, wherein the dielectric layer has a carbon content between about 5 and about 30 atomic percent excluding hydrogen atoms;

reducing the nitrogen content of a surface portion of the dielectric layer; and then

depositing a photoresist on the surface portion of the dielectric layer.

13. The method of claim 12, reducing the nitrogen content of a surface portion of the dielectric layer comprises exposing the dielectric layer to a plasma of a processing gas.

14. The method of claim 13, wherein the processing gas comprises helium, argon, neon, xenon, krypton, or combinations thereof.

15. The method of claim 13, wherein the plasma is generated at a power level between about 200 and about 800 watts.

16. The method of claim 15, wherein plasma is generated at a chamber pressure between about 3 Torr and about 12 Torr.

17. The method of claim 15, wherein the substrate is maintained between about 300°C and about 450°C when exposing the dielectric layer comprising silicon and carbon to a plasma of a processing gas.

18. The method of claim 15, wherein the dielectric layer comprising silicon and carbon is exposed to the plasma for between about 10 and about 100 seconds.

19. The method of claim 13, wherein the processing gas is introduced into a processing chamber at a flow rate of about 3000 sccm or less.

20. The method of claim 12, wherein exposing the dielectric layer comprising silicon and carbon to a plasma of a processing gas comprises introducing an inert gas of helium, argon, neon, xenon, krypton, or combinations thereof, into the processing chamber at a flow rate of about 3000 sccm or less, maintaining the processing chamber at a pressure of between about 7 Torr and about 10 Torr, maintaining the substrate temperature between about 300°C and about 450°C, generating the plasma by supplying a power level for a 200 mm substrate between about 200 watts and about 800 watts to the processing chamber, and maintaining the plasma between about 40 and about 60 seconds.

21. The method of claim 12, wherein reducing the nitrogen content of a surface portion of the dielectric layer comprises depositing a silicon containing capping material on the dielectric layer.

22. The method of claim 21, wherein the silicon containing capping material comprises silicon oxide and is deposited in situ by removing an oxygen source during deposition.

23. A method for processing a substrate, comprising:

depositing a first dielectric layer comprising silicon, carbon, and nitrogen;

depositing a nitrogen-free silicon and carbon containing material in situ on the dielectric layer;

depositing a second dielectric layer comprising silicon, oxygen, and carbon on the nitrogen-free silicon and carbon containing material by chemical vapor deposition; and

depositing a photoresist on the second dielectric layer.

24. The method of claim 23, further comprising:

treating a surface of the second dielectric layer by exposing the second dielectric layer to a plasma of a processing gas prior to depositing a photoresist on the dielectric layer comprising silicon and carbon.

25. The method of claim 23, further comprising:

patterning and etching the photoresist layer to expose the second dielectric layer; and

etching the second dielectric layer to form at least a portion of a damascene definition.

26. The method of claim 24, wherein exposing the second dielectric layer to a plasma of a processing gas comprises introducing an inert gas of helium, argon, neon, xenon, krypton, or combinations thereof, into the processing chamber at a flow rate of about 3000 sccm or less, maintaining the processing chamber at a pressure of between about 7 Torr and about 10 Torr, maintaining the substrate temperature between about 300°C and about 450°C, generating the plasma by supplying a power level for a 200 mm substrate between about 200 watts and about 800 watts to the processing chamber, and maintaining the plasma between about 40 and about 60 seconds.

27. The method of claim 25, further comprising depositing one or more conductive materials in a portion of the damascene definition to form a damascene structure.